S.E. (Civil)
CONCRETE TECHNOLOGY
(2019Pattern) (Semester-II)

1. Write down factor affecting on strength of concrete.

2. Describe factor affecting on strength of concrete in details.

3. Explain Creep of Concrete and Gel/Space ratio.

4. Derive the relation between tensile and compressive strength of concrete.

5. Write short Note on DOE method of mix design.

6. Explain the procedure for concrete mix design.

7. What are Modulus of Elasticity and Static Modulus of Elasticity?

8. Explain a) Nominal mix b) Slandered mix c) design mix.

9. Design a M50 concrete mix using IS method of Mix Design for the following data:

   1) Maximum size of aggregate - 20mm (Angular).

   2) Degree of workability - 0.90 compaction factor.

   3) Quality control - good

   4) Type of exposure - severe

   5) Specific Gravity: A. Cement - 3.15 B. Sand - 2.68 C. Coarse aggregate - 2.71

   6) Water absorption: A. Coarse aggregate -1.0% B. Fine aggregate - 2.0%

   7) Free surface moisture: A. Coarse aggregate- Nil B. Fine aggregate- 2.0%

   8) Sand confirms to zone III grading. Assume any other data required suitably.

10. What is corrosion of reinforcement? Explain remedial measures.

11. Explain the types of vibrators methods used for compaction of concrete.

12. State the application of ferrocement in construction industry.

13. Write in detail corrosion of reinforcement and its remedial measures.

14. Explain Repairs by Jacketing and Attack by sea water.

15. What is RMC? Explain in details.

16. Write short note on a) Batching plant b) Underwater concreting

17. Write short note on a) Permeability of concrete b) Corrosion of concrete

18. What is Acid attack, Sulphate attack and chloride attack on concrete?

19. Explain the common types of repairs.

20. Design a M20 concrete mix using IS method of Mix Design for the following data:

    1) Maximum size of aggregate - 30mm (Angular).

    2) Degree of workability - 0.80 compaction factor.

    3) Quality control - good

    4) Type of exposure - severe

    5) Specific Gravity: A. Cement - 3.10 B. Sand - 2.68 C. Coarse aggregate - 2.69

    6) Water absorption: A. Coarse aggregate -1.5% B. Fine aggregate - 2.5%

    7) Free surface moisture: A. Coarse aggregate- Nil B. Fine aggregate- 2.5%

     8) Sand confirms to zone III grading. Assume any other data required suitably.

S.E. (Civil)
GEOTECHNICAL ENGINEERING
(2019Pattern) (Semester-II)

1. What is subsurface contaminant? Explain in brief.

2. Explain bio-remediation technique for subsurface contamination.

3. A smooth vertical wall retains a level backfill with = 28kN/m3, = 43o, and c = 0 to a depth of 8 m. Draw the lateral earth pressure diagram and compute the active and passive thrust with its point of application.

4. State and explain the causative factors of landslides.

5. State the assumptions in Coulomb's wedge theory and explain with neat sketch.

6. Derive the relation for determination of active earth pressure for cohesion less soil when backfill is loaded by uniform surcharge. Draw the pressure diagram.

7. State and explain types of landslides that can occur.

8. Write short note on factors affecting shear strength for cohesive and cohesion less soils.

9. Explain with neat diagram indicating the position of MDD and OMC. State the significance of ZAV line.

10. State the methods for determination of field density. Explain one method.

11. Explain in brief quick sand condition.

12. Calculate the coefficient of permeability of a soil sample 8 cm in height and having 60 cm^2 cross-sectional area, if the quantity of water equal to 400 ml passed down in 10 minutes under an effective constant head of 50 cm. On oven drying, the test specimen weighs 495 g. Assuming G = 2.65, determine the seepage velocity of water during the test.

13. State and Explain liquid limit and plasticity index

14. What is pressure bulb? Explain its significance and draw a neat sketch of pressure bulb for concentrated point loading.

15. Draw a neat sketch of laboratory shear vane. A vane 9.8 cm long, 6.2 cm in diameter, was pressed into soft clay at the bottom of a bore hole. Torque was applied and the value at failure was 40 Nm. Find the shear strength of the clay on a horizontal plane.

16. Draw the plasticity chart for classification of fine grained soil.

17. Derive the relation lateral earth pressure in active state for cohesive soils along with pressure diagram and concept of Hc.

18. The plastic limit and plasticity index of the soil are 13% and 10 respectively. If the natural water content of the soil is 18%. Determine the following.

    a) Liquid Limit b)Liquidity Index c) Consistency Index

19. What do you understand by 'Pressure bulb'? Illustrate with sketches.

20. Explain Classification of slopes and their modes of failure.

1. Explain in brief Milestone chart.

2. Define the following: (Any four)
    1. Activity   2. Critical Path   3. Event (Node)   4. Dummy activity
    5. Predecessor Activity 6.Sucessor Activity 7. Loopin/Cycling   8.EFT

3. State and Explain functions of project management.

4. Write short note on CPM and PERT.

5. Explain with neat sketch matrix organizational structure.

6. Explain in brief Gantt chart & its Limitations.

7. A certain project may require 6 weeks to complete when all conditions are favorable it, may take 12 weeks by considering unfavorable conditions but by the experience it will suppose to complete within 8 weeks. What would be the expected project duration?

8. What are project life cycle phases? Explain in detail.

9. What is Delegation of Authority? Explain the Principles of Delegation of authority.

10. State and Explain Detailed project report (DPR).

11. Explain in brief: 1. Role of project management consultant.   2. IRR method

12. How to calculate simple and compound interest? What is the difference between the simple interest and compound interest payable on a principal of Rs. 25,000 in 3 years at the rate of 30% p.a.

13. Explain procedure to conduct ABC analysis.

14. What is inventory control? Explain in brief.

15. PERT calculations yield a project length of 50weeks with a variance of 16. Within how many weeks would you expect the project to be completed with a probability of (i) 90% (ii) 70% (iii) 5%

    Given: Z values for 95% = +1.65 75% = +0.69 40% = -0.25

16. A project takes 30 days along critical path and has a variance of 16 days. What is the probability of completing the project in

    i) 30 days ii) 34 days iii) 28 days

    Following are the probabilities for respective Z factor

    1) 84.1% for $Z = 1$ 2) 30.8% for $Z = -0.5$

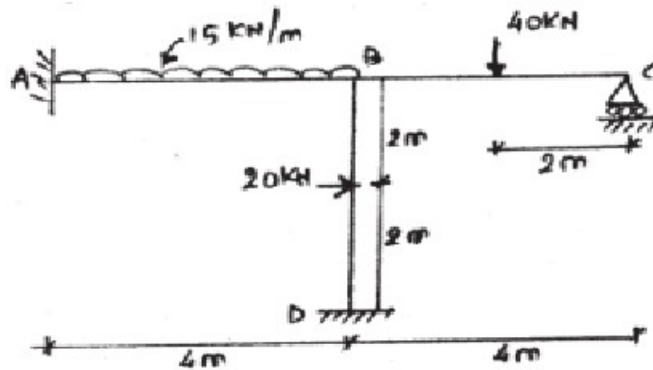17. Enlist various types of organizational structures. Explain any one in detail.

18. Enlist the principles of management by Henri Fayol. Explain any five in detail

19. Write short note on 1) PMBOK 2) Role PMC 3) Break even analysis.

20. Explain "Fulkerson's Rules" of numbering system

1. Analyze the frame shown in fig. by slope DEFLECTION method. Draw BMD. Take EI = CONST.

2. Write Short note on 1) Statically determinate structure .
   2) Statically indeterminate structure.

3. State & explain Static & Kinematic indeterminacy of structure.

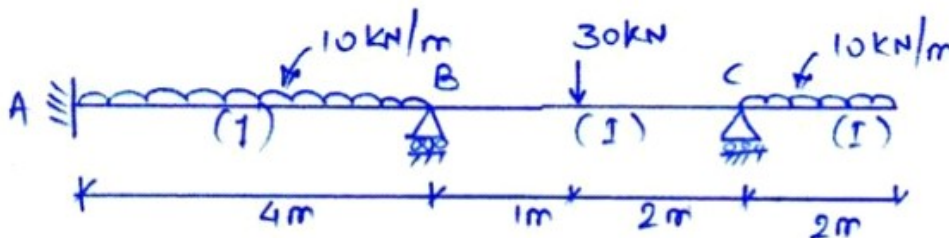4. Analyze the CONTINUOUS beam shown in fig. by slope DEFLECTION method.
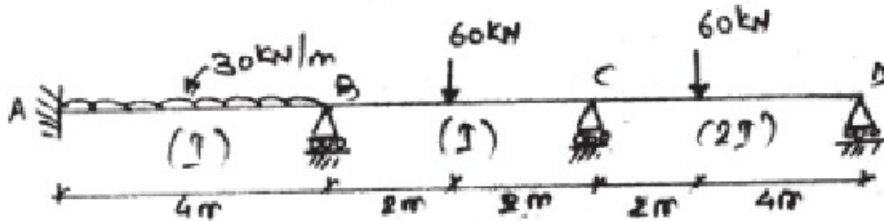
5. State and Explain Portal method & Assumptions.

6. Analyze the beam by slope deflection method. Draw B.M.D. Take EI = constant.
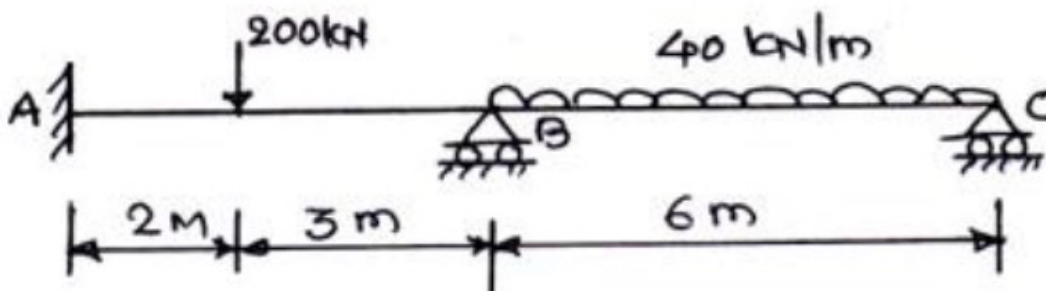
7. Analyze the frame by using Portal Method and Draw BMD (Loads are 20Kn and 40Kn respectively)
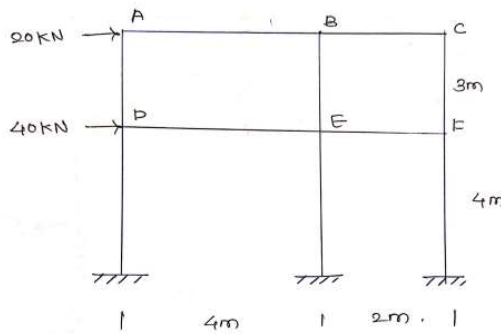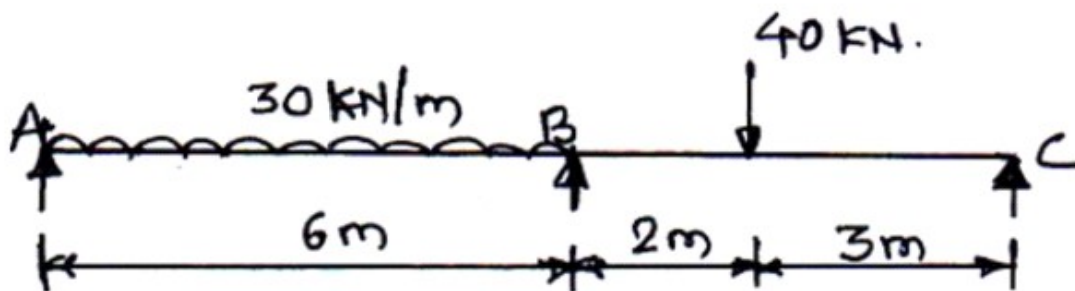

8. Analyse the contineous beam ABCD by slope deflection method. Draw BMD.
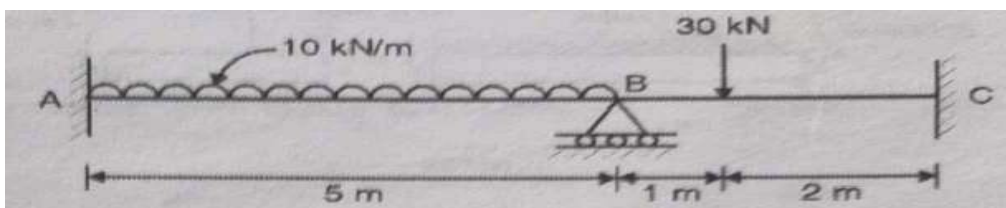

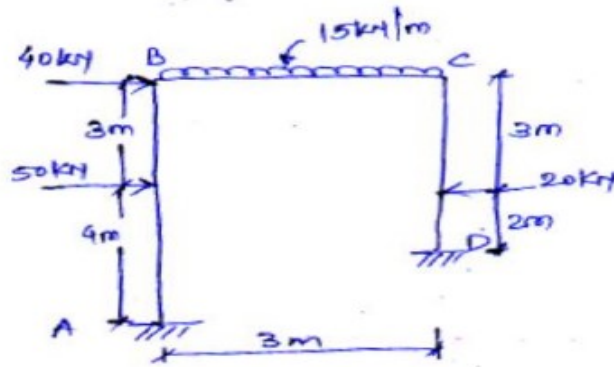9. Explain concept of sway analysis of rigid jointed frame.

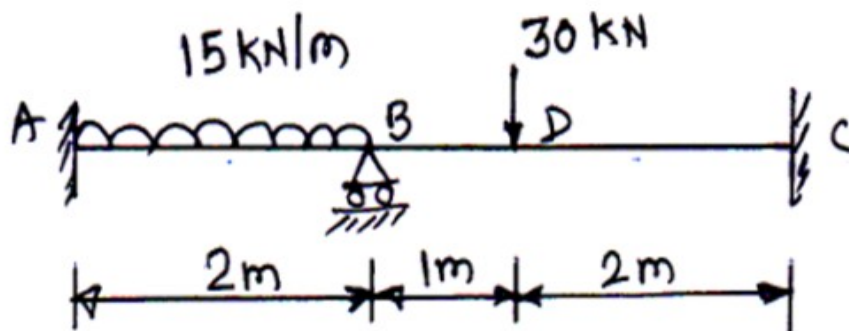10. Analyze the continuous beam by moment distribution method.

11. Analyze the beam by slope deflection method. Draw BMD & SFD. Take EI= Constant

12. Analyse the frame by stiffness matrix method. Take EI = const.

13. Analyze the beam by stiffness matrix method. Draw B. M. D. Take EI = constant.

14. State and explain assumptions in Plastic Theory.

15. Write a note on elastic-plastic bending.

1. Explain method of determining tachometric constants.

2. Define Curve. Explain various elements of curves.

3. Two tangents PQ and QR intersect at chain age 900 m. The angle of intersection is 140o. Calculate all necessary for setting out a circular curve of radius 200 m by deflection angle method. The peg interval taken is 15 m. Calculate data for field checking.

4. An instrument was setup at station P and the angle of elevated to an objective was - 19°30' the same object was focus from a point 4m away the first one angle was 11°50' the staff reading s from a B.M having elevation 511.20 m are 2.200m and 0.215m respectively. Find the RL of Q = θ1 = -19°30' θ2 = 8°40'

5. State and explain the GALILEO as positioning system with any four points.

6. Two straights AB and BC intersect at a chain age of 1804.25 m. The angle of deflection is 40o. It is required to set out a simple circular curve of 300 m radius to connect the straights. Calculate all data necessary to set out the curve by the Rankin's method with a peg interval of 20 M.

7. Two tangents PQ and QR intersect at chain age 1200 m. The angle of intersection is 150o. Calculate all necessary for setting out a circular curve of radius 200 m by deflection angle method. The peg interval taken is 30 m. Calculate data for field checking.

8. Explain with neat diagrams characteristics of Contours

9. An instrument was setup at station P and the angle of elevated to an objective was 8°30' the same object was focus from a point 5m away the first one angle was 11°150' the staff reading s from a B.M having elevation 1650.38m are 1.510m and 1.815m respectively. Find the RL of Q = θ1 = 8°30' θ2 = 15°15'

10. Explain elements of simple circular curve.

11. Draw simple circular curve showing the following components
    (i) Deflection angle   (ii) Point of tangency (iii) Sub chord
    (iv) Point of curve   (v) Unit chord   (vi) Angle of intersection.

12. Explain horizontal and Vertical Control lines while setting out of structures

13. What are the limitations of "GAGAN"

14. Explain in Brief How to align tunnel?

15. Write a detailed note on GLONASS?

16. What is Space Based Positioning System? Explain in detail.

17. What is an aerial photograph? State any five applications of Aerial Photography.

18. What is hydrographic survey? State any five applications of hydrographic survey.

19. Describe the procedure of setting out a simple circular curve by Rankine's Method of deflection angle.

20. Write a short note on "Sounding"